CLAIMS :

1.   A video coding method for the compression of a bitstream corresponding to an original video sequence that has been divided into successive groups of frames (GOFs) the size of which is $N = 2^n$ with n = 1, or 2, or 3,..., said coding method comprising the following steps, applied to each successive GOF of the sequence :

5   a)   a spatio-temporal analysis step, leading to a spatio-temporal multiresolution decomposition of the current GOF into 2^n low and high frequency temporal subbands, said step itself comprising the following sub-steps :

-        a motion estimation sub-step ;

-        based on said motion estimation, a motion compensated temporal filtering sub-

10   step, performed on each of the 2^{n-1} couples of frames of the current GOF ;

-        a spatial analysis sub-step, performed on the subbands resulting from said temporal filtering sub-step ;

        b)   an encoding step, said step itself comprising :

-        an entropy coding sub-step, performed on said low and high frequency

15   temporal subbands resulting from the spatio-temporal analysis step and on motion vectors obtained by means of said motion estimation step ;

-        an arithmetic coding sub-step, applied to the coded sequence thus obtained and delivering an embedded coded bitstream ;

said coding method being further characterized in that, in the encoding step, the 2^n frequency

20   subbands available at the end of the analysis step for each GOF are coded in an order that corresponds to a progressive reconstruction of the couples of frames of said GOF in their original order, the bits necessary to later decode the first couple of frames being at the beginning of the coded bitstream, followed by the extra bits necessary to decode the second couple of frames, and so on, up to the last couple of frames of the current GOF.

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2.   A coding method according to claim 1, characterized in that, n being equal to 3, among the set of subbands available for the current GOF at the end of said analysis step and comprising the high frequency temporal subbands (H0, H1, H2, H3) of the first decomposition level, the high frequency temporal subbands (LH0, LH1) of the second

decomposition level and the low and high frequency temporal subbands (LLL0, LLH0) of the third decomposition level, the subbands (LLL0, LLH0, LH0, H0) are first coded, then the subband H1, then the subbands (LH1, H2), and then the subband H3.

5   3.   A video coding device for the compression of a bitstream corresponding to an original video sequence that has been divided into successive groups of frames (GOFs) the size of which is $N = 2^n$ with $n = 1$, or 2, or 3,..., said coding device comprising, for generating the coded bitstream :

-          motion estimation means, applied to the frames of each current GOF of the

10   sequence ;

-          motion compensated temporal filtering means, performed on each of the 2^{n-1} couples of frames of the current GOF on the basis of motion vectors thus estimated ;

-          spatial analysis means, performed on the subbands thus obtained ;

-          encoding means, applied to the 2^n low and high frequency temporal subbands

15   of the spatio-temporal multiresolution decomposition of the current GOF obtained by means of the spatio-temporal analysis thus performed, said encoding means themselves comprising entropy coding means, applied to said low and high frequency temporal subbands and on said motion vectors, and arithmetic coding means, applied to the coded sequence thus obtained, said encoding means being moreover characterized in that they are applied to said 2^n

20   frequency subbands in an order that corresponds to a progressive reconstruction of the couples of frames of said GOF in their original order, the bits necessary to later decode the first couple of frames being at the beginning of the coded bitstream, followed by the extra bits necessary to decode the second couple of frames, and so on, up to the last couple of frames of the current GOF.

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4.   A transmittable video signal consisting of a coded bitstream generated by a video coding method for the compression of a bitstream corresponding to an original video sequence that has been divided into successive groups of frames (GOFs) the size of which is $N = 2^n$ with $n = 1$, or 2, or 3,..., said coding method comprising the following steps, applied

30   to each successive GOF of the sequence :

a)   a spatio-temporal analysis step, leading to a spatio-temporal multiresolution decomposition of the current GOF into 2^n low and high frequency temporal subbands, said step itself comprising the following sub-steps :

-          a motion estimation sub-step ;

-           based on said motion estimation, a motion compensated temporal filtering sub-step, performed on each of the 2^{n-1} couples of frames of the current GOF ;

-           a spatial analysis sub-step, performed on the subbands resulting from said temporal filtering sub-step ;

5   b)   an encoding step, said step itself comprising :

-           an entropy coding sub-step, performed on said low and high frequency temporal subbands resulting from the spatio-temporal analysis step and on motion vectors obtained by means of said motion estimation step ;

-           an arithmetic coding sub-step, applied to the coded sequence thus obtained and

10   delivering an embedded coded bitstream ;

said encoding step being applied to the 2^n frequency subbands available at the end of the analysis step for each GOF in an order that corresponds to a progressive reconstruction of the couples of frames of said GOF in their original order, the bits necessary to later decode the first couple of frames being at the beginning of said coded bitstream, followed by the extra

15   bits necessary to decode the second couple of frames, and so on, up to the last couple of frames of the current GOF.

5.   A video decoding method for the decompression of a coded bitstream corresponding to an original video sequence that has been divided into successive groups of

20   frames (GOFs) the size of which is $N = 2^n$ with n = 1, or 2, or 3,..., and obtained by means of a coding method comprising the following steps, applied to each successive GOF of the sequence :

a)   a spatio-temporal analysis step, leading to a spatio-temporal multiresolution decomposition of the current GOF into 2^n low and high frequency temporal subbands, said

25   step itself comprising the following sub-steps :

-           a motion estimation sub-step ;

-           based on said motion estimation, a motion compensated temporal filtering sub-step, performed on each of the 2^{n-1} couples of frames of the current GOF ;

-           a spatial analysis sub-step, performed on the subbands resulting from said

30   temporal filtering sub-step ;

b)   an encoding step, said step itself comprising :

-           an entropy coding sub-step, performed on said low and high frequency temporal subbands resulting from the spatio-temporal analysis step and on motion vectors obtained by means of said motion estimation step ;

-           an arithmetic coding sub-step, applied to the coded sequence thus obtained and delivering an embedded coded bitstream ;

said encoding step being applied to the 2^n frequency subbands available at the end of the analysis step for each GOF in an order that corresponds to a progressive reconstruction of the

5   couples of frames of said GOF in their original order, the bits necessary to later decode the first couple of frames being at the beginning of said coded bitstream, followed by the extra bits necessary to decode the second couple of frames, and so on, up to the last couple of frames of the current GOF.

10   6.   A video decoding device for the decompression of coded bitstream corresponding to an original video sequence that has been divided into successive groups of frames (GOFs) the size of which is $N = 2^n$ with n = 1, or 2, or 3,..., and obtained by means of a coding method comprising the following steps, applied to each successive GOF of the sequence :

15   a)   a spatio-temporal analysis step, leading to a spatio-temporal multiresolution decomposition of the current GOF into 2^n low and high frequency temporal subbands, said step itself comprising the following sub-steps :

-           a motion estimation sub-step ;

-           based on said motion estimation, a motion compensated temporal filtering sub-

20   step, performed on each of the 2^{n-1} couples of frames of the current GOF ;

-           a spatial analysis sub-step, performed on the subbands resulting from said temporal filtering sub-step ;

b)   an encoding step, said step itself comprising :

-           an entropy coding sub-step, performed on said low and high frequency

25   temporal subbands resulting from the spatio-temporal analysis step and on motion vectors obtained by means of said motion estimation step ;

-           an arithmetic coding sub-step, applied to the coded sequence thus obtained and delivering an embedded coded bitstream ;

said encoding step being applied to the 2^n frequency subbands available at the end of the

30   analysis step for each GOF in an order that corresponds to a progressive reconstruction of the couples of frames of said GOF in their original order, the bits necessary to later decode the first couple of frames being at the beginning of said coded bitstream, followed by the extra bits necessary to decode the second couple of frames, and so on, up to the last couple of frames of the current GOF, and said decoding device comprising means for decoding said 2^n

frequency subbands in said order, up to the reconstruction of all the couples of frames of said current GOF.